

WHAT IS CLAIMED IS:

1. An aligner for illuminating a mask (or  
reticle) with light emitted from a light source and  
exposing an object to be exposed with light reflected  
5 from the mask, comprising:

oxygen density detection means for detecting an  
oxygen density on an optical path between the light  
source and the object to be exposed;

moisture density detection means for detecting  
10 a moisture density on the optical path; and

control means for controlling a light exposure  
to be irradiated to the object to be exposed based on  
the detection results of the oxygen density detection  
means and the moisture density detection means.

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2. The aligner according to claim 1, wherein  
quantity-of-light detection means is included  
which detects a quantity of light at a predetermined  
position on the optical path.

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3. The aligner according to claim 1, wherein  
light exposure detection means is included  
which detects a quantity of light irradiated to the  
object to be exposed.

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4. The aligner according to claim 1, wherein  
the control means controls the light exposure

in accordance with a relation between an absorbed quantity of light emitted from the light source (absorptance of light having a wavelength emitted from the light source) and an oxygen density  
5 (relation between absorbed quantity of light irradiated to the object to be exposed and a certain oxygen density).

5. The aligner according to claim 4, wherein  
10 a relation between an oxygen density and an absorptance of light emitted from the light source is previously included as data.

6. The aligner according to claim 1, wherein  
15 the control means controls the light exposure in accordance with a relation between an absorbed quantity of light emitted from the light source (absorptance of light having a wavelength emitted from the light source) and a moisture density  
20 (relation between an absorbed quantity of light irradiated to the object to be exposed and a certain moisture density).

7. The aligner according to claim 6, wherein  
25 a relation between a moisture density and an absorbed quantity of light emitted from the light source is previously included as data.

8. The aligner according to claim 1, wherein the light emitted from the light source is an excimer laser beam.

5           9. The aligner according to claim 8, wherein the excimer laser beam is an F<sub>2</sub> laser beam.

10           10. The aligner according to claim 1, wherein the control means has an ND filter and the ND filter controls a light exposure to be irradiated to the object to be exposed.

15           11. The aligner according to claim 1, wherein the control means has a diaphragm to control a light exposure to be irradiated to the object to be exposed by changing opening diameters of the diaphragm.

20           12. A device fabrication method comprising:  
a step of exposing the object to be exposed by using the aligner of claim 1; and  
a step of developing the exposed object.

25           13. An aligner for transferring a pattern formed on a mask or reticle to an object to be exposed comprising:  
quantity-of-light detection means for detecting

a quantity of exposure light;

oxygen density detection means for detecting an oxygen density in an exposure environment;

moisture density detection means for detecting  
5 a moisture density in the exposure environment; and

control means for controlling the quantity of the exposure light in accordance with data showing the relation between the oxygen density, the moisture density and the absorbed quantity of the exposure  
10 light and detection results by the oxygen density detection means and the moisture detection means previously obtained.

14. A device fabrication method comprising:  
15 a step exposing the object to be exposed by using the aligner of claim 13; and  
a step of developing the exposed object.